

WHAT IS CLAIMED IS:

1           1.    An exopolysaccharide produced by a bacterium  
2    comprising the following characteristics: Gram negative,  
3    bacilliary, about 0.2X0.8  $\mu$ m, facultative anaerobe, grows  
4    between 15°and 45°C with a temperature optimum of 37°C, grows  
5    between pH 4-11 but not at pH 2, grows in AB13 medium or  
6    minimal medium, is motile, lacks a capsule, lacks spores,  
7    and produces an elastic, exopolysaccharide with a sugar  
8    content of galactose, fucose, glucose, mannose in a ratio of  
9    about 1:2:3:6.

1           2.    The exopolysaccharide produced by the bacterium of  
2    claim 1, wherein the bacterium further comprises the  
3    characteristics of an antibiotic sensitivity profile as in  
4    Table 2, a biochemistry profile as in Table 3, and a carbon  
5    utilization profile as in Table 4.

1           3.    The exopolysaccharide produced by the bacterium of  
2    claim 1, wherein the bacterium further comprises the total  
3    protein SDS-PAGE profile of the LAB-1 strain of FIGURE 2 and  
4    FIGURE 3.

1           4.    The exopolysaccharide produced by the bacterium of  
2   claim 1, wherein the bacterium further comprises the  
3   characteristics of a 16S rRNA gene of SEQ ID NO: 1.

1           5.    An exopolysaccharide produced by a bacterium  
2   comprising the 16S rRNA gene of SEQ ID NO: 1.

1           6.    An       exopolysaccharide,       wherein said  
2   exopolysaccharide consists essentially of neutral sugars  
3   migrating at the same rate as mannose, fucose, fructose and  
4   galactose, acidic sugars migrating at the same rate as  
5   fucose and amine sugars migrating at the same rate as  
6   glucose and fucose, wherein the sugar ratio of  
7   galactose:fucose:glucose:mannose is about 1:2:3:6.

1           7.    An exopolysaccharide produced by the LAB-1 strain  
2   at ATCC No. PTA-2500.

1           8.    The exopolysaccharide of claims 1-7, for use as a  
2   biofilm in soil treatments.

1           9.    A biofilm comprising the exopolysaccharide of  
2   claims 1-7.

1           10. The biofilm of claim 9, wherein the biofilm is  
2       used to plug open conduits.

1           11. The biofilm of claim 9, wherein the biofilm is  
2       deposited in a subsurface biofilm cutoff wall.

1           12. The biofilm of claim 9, wherein the biofilm is  
2       deposited in a subsurface liner consisting of compacted,  
3       biofilm treated soil.

1           13. The biofilm of claim 9, wherein the biofilm is  
2       used to treat a geotextile to create a liner.

1           14. A process for plugging a permeable stratum,  
2       comprising the steps of a) providing the biofilm of claim 9  
3       into a permeable stratum, b) incubating said biofilm for an  
4       amount of time sufficient to produce a plugged stratum.

1           15. The process of claim 13, wherein the plugged  
2       stratum has a saturated hydraulic conductivity equal to or  
3       less than  $1.0 \times 10^{-7}$  cm/sec.

1           16. The process of claim 13, wherein the plugged  
2   stratum has a saturated hydraulic conductivity equal to or  
3   less than  $1.5 \times 10^{-8}$  cm/sec.